

REMARKS

A replacement sheet of drawings is enclosed herewith for entry into the file of the subject application and the specification has been amended to provide specific reference thereto.

Claims have been amended to more clearly define the present invention. Specifically, independent claim 1 has been amended to define the tungsten or molybdenum as not forming an alloy with the silver or silver-based alloy but rather being depicted in a fine distribution in grain boundaries of the silver. Support for this amendment is found in the original specification on page 5, line 30. Accordingly, no new matter has been added.

Independent claim 5 has been amended to define the contact making coating as being deposited in a gradient manner wherein a concentration of the silver or silver-based alloy is lower at a surface of the coating than at deeper regions of the coating. This is accomplished specifically through depositing the coating by a sputtering PVD process as set forth in claim 11 depended from claim 10 which has been amended similar to claim 5.

Claims 3, 5-6 and 9 objected to by the Examiner under 37 CFR 1.75(c) as being of improper dependent form have been cancelled to amended to overcome the objection.

Claims 1, 2, 7-8, 10 and 12 have been rejected by the Examiner under 35 USC 112, second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which the Applicant regards as the invention. In response thereto, the Applicant has either cancelled or amended the claims to overcome this rejection.

Claims 1-15 and 17-19 have been rejected by the Examiner under 35 USC 103(a) as being unpatentable over U.S. 5,679,471 to Cheng, et al. in view of JP 59-153852 to Koichi (English abstract).

In this rejection, the Examiner states that Cheng teaches electrical connectors having a silver-based coating exhibiting prolonged fretting where durability, low contact resistance, low coefficient friction, and high thermal stability.

The Examiner acknowledges that Cheng is silent with regard to specific materials such as tungsten or molybdenum and therefore looks to Kochi for teaching an AgNi electrical contact material having improved consumption and welding resistance due to the inclusion of between 0.05 – 5.0 wt % of an additional material such as Mo or W. The Examiner concludes it would have been obvious to add 0.05 – 5 wt% of a known additive such as W or Mo as taught by Kochi to the Ag-Ni coating material of Cheng with a reasonable expectation of success forming a contact having improved hardness and consumption and welding resistance.

On the basis of amended claims, there is clearly no teaching in either of the references of the tungsten or molybdenum disposed in a fine distribution in grain boundaries of the silver or the coating being deposited in a gradient manner wherein a concentration of the silver or silver-based alloy is lower at a surface of the coating than in deeper regions of the coating.

The Applicants submit that evidence showing there is no reasonable expectation of success supports a conclusion of non-obviousness. *In re Rinehart*, 189 USPQ 143 (CCPA 1976). Such evidence is as follows:

Both Cheng and Koichi attribute the superior performance of their materials to the microstructure. However, the microstructure is completely different. Cheng teaches a silver nickel nanocomposite coating (column 1, lines 6 to 12, column 8, lines 12 to 15). The nano composite coating has a nanocrystalline structure (column 4, lines 26 to 31). In short, Cheng teaches a material with very small grains, i. e. an average grain size of about 5 to 50 nanometer. In contrast, Koichi teaches a material with very large grains.

Although the English abstract of Koichi is very short, the grain volume is explicitly mentioned in connection with increased hardness and improved consumptive resistance. The grain volume at the end of the 4<sup>th</sup> to last line of the English abstract is difficult to read as some special characters were not correctly translated. However, the numbers 150 and part of unit ( $\text{m}^3$ ) can be read. The Japanese text on the first page of Koichi states in the 4<sup>th</sup> to last line of the right column  $150 \mu\text{m}^3$ . The third root of  $150 \mu\text{m}^3$  yields about  $5.3 \mu\text{m}$ , i. e. 5300 nano meter. Hence, Koichi teaches a grain size more than a hundred times larger than the grain size taught by Cheng. As both Cheng and Koichi attribute the superior performance of their materials the microstructure, their central teachings are not compatible.

The examiner has argued on page 7, last paragraph of the office action, that Koichi's disclosure of grains does not appear to be drawn to grain size, but rather the particle size of the additives. The English abstract of Koichi explicitly refers to the grains of NI, TI, W, MO and CR in the contact material. The text clearly refers to grain size.

Moreover, present claim 1 states a thickness of  $0.5 \mu\text{m}$  to  $5 \mu\text{m}$ . Such a thickness is impossible to achieve with grain sizes (or even particle size) of more than  $5 \mu\text{m}$  as taught by Koichi.

Lastly, Cheng discloses an electro deposited film whereas Koichi discloses bulk material. Composition, microstructure and method of production are completely different. For this reason it is not apparent why a skilled person starting from Cheng would want to pick the additives Tungsten and Molybdenum from Koichi's material and add them to Cheng's material. Even if the skilled person would try to do so, this could not lead to the matter of present claims 1. The reason for this is that it is not possible to deposit Molybdenum and Tungsten in pure form by electro deposition. It is only possible to deposit alloys of Tungsten and Molybdenum.

Support for the Applicant's position is found in a German textbook "Handbuch der Galvanotechnik" (Manual of Electroplating).

Paragraph 17.158 on page 551 states explicitly that it is not possible to deposit molybdenum and tungsten in pure form by electrode deposition. See Appendix A and Appendix A-1 to this response.

Traverse of this rejection applies to claims 1-15 and 17-19. If an independent claim is non-obvious under 35 USC 103 then any claim depending therefrom is non-obvious. *In re Fine*, 5 USPQ 2d 1596 (Fed. Cir. 1988).

According to Section 2143.03 of the MPEP: “All words in a claim must be considered in judging the patentability of that claim against a prior art.” *In re Wilson*, 165 USPQ 494 (CCPA 1970).

The Applicant further submit that the Supreme Court in KSR International Company v. Teleflex, Inc. has issued its opinion regarding the issue of obviousness under 35 USC 103(a) when a claim recites a combination of elements of the prior art. KSR International Company v. Teleflex, Inc., 35 USPQ 2d 1396 (U.S. April 30, 2007).

In this decision, the court reaffirmed the Graham factors in the determination of obviousness under 35 USC 103(a). The court did not totally reject the use of “teaching, suggestion, or motivation” as a factor in the obviousness analysis. Rather, the court recognized that the showing of “teaching, suggestion, or motivation” to combine the prior art to meet the claim subject matter could provide a helpful incite in determining whether the claimed subject matter is obvious under 35 USC 103(a).

Moreover, the court noted that the analysis supporting a rejection under 35 USC 103(a) should be made explicit, in that it was “important to identify a reason that would have prompted a person of ordinary skill in the relevant art to combine the [prior art] elements” in the manner claimed.

Thus, the court concluded in KSR that the appropriate question in the federal circuit is whether a designer of ordinary skill, facing a wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrade either of the cited patents.

In the case at hand, it is clear that a designer of a product for a plug-in connector would not have seen a benefit to “upgrade” Cheng, et al. with Kochi for the reason herein set forth.

With specific reference to claim 18, however, the Examiner has stated that Cheng is silent to the concentration of the addition being lower at the surface than in a deeper region of the coating; however, since the coating is formed from the same materials in a substantially similar manner, it would be expected that it would exhibit the same property of having a higher concentration in a deeper region as claimed.

The Applicant submit that a rejection based on Section 103 must clearly rest on a factual basis, and these facts must be interpreted without hindsight reconstruction of the invention from the prior art. The patent office has the initial duty of supplying the factual basis for its rejection and it may not, because it may doubt that the invention is patentable, resort to speculation, unfounded assumptions, or hindsight to supply the deficiencies in its factual basis. Here, the Examiner is provided no factual basis for the statement: “it would be expected that it would exhibit the same property of having a higher concentration in a deeper region such as claimed.”

In view of the arguments hereinabove set forth and amendment to the claims and specification, it is submitted that each of the claims now in the application define patentable subject matter not anticipated by the art of record and not obvious to one skilled in this field who is aware of the references of record. Reconsideration and allowance are respectfully requested.

Respectfully submitted,



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